Book Reviews

Phytochemicals for Pest Control.. By Paul A. Hedin, Robert M. Hollingworth, Edward P. Masler, Junshi Miyamoto, and Dean G. Thompson (U.S. Department of Agriculture (Hedin, Masler), Michigan State University (Hollingworth), Sumitomt Chemical Company, (Miyamoto), Canadian Forest Service (Thompson)). American Chemical Society, Washington, DC. 1997. x + 372 pp. 15 × 22.5 cm. $150.00. ISBN 0-8412-3488-4.

Those who are passionate about natural products will find, as with a good novel, great difficulty putting this book down. The contents are coveniently divided into four parts: Identification and Utilization of Biologically Active Natural Products; Novel Natural Products with Applications for Pest Management; Structure−Activity Studies of Natural-Product Pest Control Agents; and Biologically Active Proteins and Peptides Affecting Insects. The latter topic is particularly comprehensive and cohesive. The title includes the word "pest", and this notation has, unfortunately, come to take on several meanings over the years. Most often, this includes all manner of ills that befall plants and crops, but in this case the topic mostly deals with insects. In fact, of the 26 chapters, 19 deal exclusively with insects, while the other seven are an eclectic mix of antifungal agents, microbially derived herbicides, and phytoalexins. For those who were close to the early discoveries in agricultural chemicals, a weak point is the historical coverage of their genesis. Many were discovered and developed for nonpeaceful purposes in WWII, but for the most part, this has been conveniently forgotten over the intervening years. There are some typographical errors and glitches that seemed to slip by reviewers, editors, and proofreaders and are the bane of offset printing. But even for the veteran natural products enthusiast, there are a number of techniques and ideas that come into focus on reading this book. No serious student should be without it, not even those who claim considerable knowledge of the science and art of natural products.

Horace G. Cutler
Southern School of Pharmacy
Natural Products Discovery Group
Mercer University
3001 Mercer University Drive
Atlanta, Georgia 303414155

NP970096J

S0163-3864(97)00096-7

High Throughput Screening: The Discovery of Bioactive Substances. Edited by J. P. Devlin (AART International, Inc. New Milford, CT). Marcel Dekker, Inc., New York. 1997. xxiv + 673 pp. 17.5 × 25 cm. $165.00. ISBN 0-8247-0067-8.

High throughput screening (HTS) is a technology that has developed inside the pharmaceutical industry since the mid-1980s. It has emerged in response to the profusion of new biological targets and the need of the pharmaceutical industry to rapidly generate new drugs in a changed commercial environment. Its development has been aided by the invention of new instrumentation, by new assay procedures, and by the availability of databases that allow huge numbers of data points to be managed effectively. It is not without irony for readers of this journal that the development of HTS has been matched by a decline in natural products research inside the pharmaceutical industry; this has occurred largely because of the ease and speed of identifying plausible starting molecules for drug development by screening the tens of thousands of compounds most companies have in their chemical libraries. The editor of this multiauthored book makes a valiant effort to remind us all of the richness of natural sources by dealing with the subject in the first of the six sections of the book. The opening chapter is a good review of some of the current issues in HTS: chemical diversity, compound supply, and microbe and plant supply—especially with respect to international relationships. This leads into a review of plant collection and handling and a fine review of the marine environment as a source of useful new chemical entities. The chapter on enzymes and microbes catalogs a lot of microbial processes but does not systematically deal with microbial diversity and productivity and makes no mention of exciting new developments such as mutasynthesis.

The second section deals very fully with the sourcing of chemical compounds for screening libraries. Of necessity, this involves a lot of combinatorial chemistry, and some of the leading figures in the field are contributors to this section.

A key to the overall success of HTS is the development of new assay technologies and detection methods, and in the third section there are chapters on scintillation proximity, time-resolved fluorescence, and fluorescence polarization, among others. In addition, there are useful chapters on assay design and on reporter gene assays.

Without automation and robotics HTS would not be possible, and in section four several examples from the industry are presented that provide a good overview of the multiple considerations that need to be made when humans and robots commingle. Laboratory design is an important factor here, and a fuller exploration of design in relation to robots and humans would have been useful.

With all the advances in assay technology, automation, and high throughput, little drug discovery progress would be made without a good data retrieval and handling system. The chapter on database systems in the fifth section of the book is a clear and thorough review of the subject matter.

The last section deals briefly with laboratory design and management and will be particularly useful for smaller startup organizations.

Overall, this is an excellent compendium of chapters

covering the breath of current HTS. It will serve as a standard text in a field which is rapidly changing from HTS to ultra HTS.

Joe O'Sullivan
Bristol-Myers Squibb
P.O. Box 4000
Princeton, New Jersey 08543

NP970097B

S0163-3864(97)00097-9

Studies in Medicinal Chemistry, Vol. 1: Progress in Medicinal Chemistry. By M. Iqbal Choudhary, University of Karachi. Harwood Academic Publishers, Amsterdam, The Netherlands. 1996. xiv + 390 pp. 17 × 24.5 cm. $150.00. ISBN 3-7186-5795-3.

The first volume of a new series, *Studies in Medicinal Chemistry*, entitled *Progress In Medicinal Chemistry*, provides the reader with a collection of eight extensive reviews on topics of current research interest. Authored by knowledgeable scientists active in the areas reported, the topics selected reflect the diverse, multidisciplinary nature of modern medicinal chemistry research.

The first chapter, "Expanding the Role of Macrolide Compounds as Therapeutic Agents," discusses the chemistry and SAR of 14-membered and 16-membered macrolide antibiotics. "Lexitropsins: Design and Development of Sequence—Selective DNA Minor Groove—Binding Agents as New Chemotherapeutics" (Chapter 2) is an extensive review (428 references) of the chemistry and biology of this class of "information-reading" molecules. "Recent Trends in the Quinoline Field" (Chapter 3) is an overview of the SAR of an important group of antibacterials. Chapter 4, "Low Molecular Weight Compounds for Boron Neutron Capture Therapy," describes a tumor radiation therapy technique. In Chapter 5, the importance of conformation of a drug at the moment of its interaction with its receptor is examined in "The Frozen Analog Approach in Medicinal Chemistry." A very brief (8 pages, 62 references), but timely, review of "The Bistratenes: Novel Tools to Study Cell Growth Regulation" examines the biological effects of a family of polyether marine toxins in Chapter 6. Chapter 7 reviews "Dextromethorphan, Carbetapentene and Analogs as Anticonvulsant and Neuroprotectant Agents." The final chapter overviews "Plasma Proteins as Drug Carriers for Hepatic and Renal Targeting."

A strength of this relatively expensive ($150.00) volume is that it is well written, solidly referenced and adequately illustrated with appropriate figures and tables. While the selection of topics may not give the average reader new to medicinal chemistry a good glimpse at the most active research areas (always a debatable task), this book does highlight research of contemporary importance well. The insight provided in each chapter makes this review source a useful addition to individual, academic and industrial bookshelves.

Prof. R. D. Sindelar
Department of Medicinal Chemistry
University of Mississippi
FASER 417
University, Mississippi 38677

NP9700984

S0163-3864(97)00098-0